

# BANGLADESH SWEDEN POLYTECHNIC INSTITUTE, KAPTAI

## SEMESTER PLAN

### CONSTRUCTION TECHNOLOGY

Teacher Name: Md. Rashidul Islam(R.I) Subject : Civil Engineering Materials (66421)

### THEORETICAL

Week No.	Content No.	Brief Description of Content
01	Various aspects of engineering materials.	<ol style="list-style-type: none"><li>Define engineering materials.</li><li>Mention the classification of engineering materials in different technology</li><li>List the characteristics of engineering materials.</li></ol>
02	Stone	<ol style="list-style-type: none"><li>Define building stones.</li><li>Mention geological, physical and chemical classification of stones.</li><li>List the characteristics of good building stones.</li><li>Describe the dressing of stones.</li><li>Describe the uses of stone in engineering filed.</li></ol>
03	<b>1<sup>ST</sup> Class Test</b>	<b>Chapter 01 to 02</b>
	Brick&Hollow Block	<ol style="list-style-type: none"><li>Define brick.</li><li>Mention different constituents for manufacturing of good bricks.</li><li>Explain pug mill, table molding and machine molding.</li><li>Describe the process of drying and burning.</li><li>Describe the methods of kiln burning of brick.</li><li>Draw the sketches Bull's trench kiln &amp; Hoffman's kiln.</li><li>Explain the size of brick as per BNBC&amp;PWD Specification.</li><li>Explain common testing of bricks as per BNBC Compressive strength ,Water Absorption ,Efflorescence, Dimensional tolerance Test.</li><li>Define Special brick: Hollow Block&amp; Ceramics Bricks.</li><li>Mention the use of Hollow Block&amp; Ceramics Bricks.</li><li>State the Advantage and disadvantage of Hollow Block&amp; Ceramics Bricks.</li></ol>
04	Sand.	<ol style="list-style-type: none"><li>Mention the classification of sand according to their sources.</li><li>Mention the specifications of good sand.</li><li>Describe the purpose of grading of sand.</li><li>Mention the use of various grades of sand.</li></ol>
05	Cement.	<ol style="list-style-type: none"><li>Define cement.</li><li>Mention the functions of various ingredients of cement.</li><li>Distinguish between wet process and dry process of manufacturing Portland cement.</li><li>Draw a flow diagram based on wet process of manufacturing of cement.</li><li>Mention the Properties and uses of ordinary portland cement.</li><li>Explain the testing of cement as per BNBC: strength of cement, Fineness by sieving, Consistency, Soundness, Setting Time.</li><li>Understand special cement and their uses.</li><li>Explain storage of cement.</li></ol>

06	Tiles	<ol style="list-style-type: none"> <li>i. Identify the following tiles: clay tiles, concrete tiles, Plastic tiles, Mosaic tiles, Marble tiles, Glazed tiles.</li> <li>ii. Describe the uses of different kinds of tiles.</li> </ol>
	<b>2<sup>nd</sup> Class Test</b>	<b>Chapter 03-06</b>
07	Timber and wood Based products.	<ol style="list-style-type: none"> <li>i. Define timber.</li> <li>ii. Mention the classification of trees depending on botanical groups.</li> <li>iii. Explain conservation of timber in various market forms.</li> <li>iv. Describe the major defects in timber.</li> <li>v. Describe the advantages and disadvantages of using timber in the engineering field.</li> <li>vi. Describe the characteristics of good timber.</li> </ol>
08	Glass and ceramics.	<ol style="list-style-type: none"> <li>i. Mention the constituents of glass.</li> <li>ii. List the properties of glass.</li> <li>iii. Mention the uses of glass.</li> <li>iv. Describe the constituents of ceramics.</li> <li>v. Mention the classification of ceramics.</li> <li>vi. List the properties of ceramics.</li> <li>vii. Describe the uses of ceramics in engineering field.</li> </ol>
09	Paints and varnishes.	<ol style="list-style-type: none"> <li>i. Define paints and varnish.</li> <li>ii. Explain the characteristics of good paint.</li> <li>iii. List the essential constituents of paint.</li> <li>iv. Explain the functions of pigment.</li> <li>v. List the main constituents of varnishes.</li> <li>vi. Explain the characteristics of good varnish.</li> <li>vii. Mention the functions of vehicle.</li> <li>viii. Describe synthetic materials used for paint and varnishes.</li> </ol>
10	Plastic.	<ol style="list-style-type: none"> <li>i. Define plastic.</li> <li>ii. List the names of raw materials for plastic.</li> <li>iii. Explain the properties of plastic.</li> <li>iv. Mention the characteristics of thermoplastic and thermosetting plastic.</li> <li>v. Describe the manufacturing process of plastic.</li> <li>vi. Explain the molding methods of plastic products.</li> <li>vii. Identify the uses of plastic as engineering materials.</li> <li>viii. Explain laminating plastic.</li> </ol>
11	Alloys and Metals .	<ol style="list-style-type: none"> <li>i. Name the common types of iron used in industry.</li> <li>ii. Mention the uses of wrought iron and cast iron.</li> <li>iii. Mention the classification of steel on the basis of carbon content.</li> <li>iv. List the names of commercial steels.</li> <li>v. Describe alloy steel.</li> <li>vi. Mention the uses of various alloy steels.</li> <li>vii. Define non-ferrous metals.</li> <li>viii. List the important non-ferrous metals used in engineering field.</li> <li>ix. Mention the uses of non-ferrous metals and alloys like copper, zinc, tin, lead, brass and bronze.</li> </ol>
	<b>3<sup>rd</sup> Class Test</b>	<b>Chapter 07-11</b>
12	Insulating materials.	<ol style="list-style-type: none"> <li>i. Mention the functions of insulating materials.</li> <li>ii. List five natural heat insulating materials.</li> <li>iii. Mention the names of synthetic insulating materials.</li> <li>iv. Describe the sources of obtaining rubber, cork and ebonite.</li> <li>v. Describe the uses of asbestos as insulating material.</li> <li>vi. List three natural sound absorbing materials.</li> <li>vii. Mention the names of five sound absorbing materials.</li> <li>viii. Explain light weight concrete used in acoustic works.</li> </ol>

13	Geo-textiles	i. Introduction to geo-textiles.. ii. Mention the use of geo-textiles . iii. Describe the Advantage and disadvantage of geo-textiles.
14	Lime.	i. Define Lime. ii. Mention the use of Lime . iii. List the Advantage and disadvantage of Hollow Block& Ceramics Bricks.
15	Construction Chemicals and water proofing materials.	i. Define Construction chemicals/Admixture. ii. Make a List of Construction chemicals. iii. Mention the use of Construction chemicals. iv. Define water proofing materials. v. Make a List of water proofing materials. vi. Mention the use of water proofing materials.
<b>4th Class test-( 12-16) and All Chapter Reviewe.</b>		

**REFERENCE BOOKS :**

- A text book on Engineering Materials — G. J. Kulkarni
- Engineering Materials — Dr. M. A. Aziz
- Plastic Materials — J. A Brydson

